

**Claims**

**What is claimed:**

1. A method for preventing a topology with partially intersecting VLANs, the method comprising:

5 receiving information regarding creation of a network circuit;

receiving information regarding assignment of a test VLAN to the created network circuit;

10 retrieving provisioning data including presence of other network circuits and assignments of VLANs to the other network circuits;

determining if the test VLAN intersects entirely with any of the other assigned VLANs;

15 determining if the test VLAN is distinct from all the other assigned VLANs; and

determining if the test VLAN is acceptable based on said determining if the test VLAN intersects entirely and said determining if the test VLAN is distinct.

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2. The method of claim 1, further comprising associating a new spanning tree with the test VLAN, responsive to said determining making a determination that the test VLAN is acceptable.

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3. The method of claim 2, wherein the new spanning tree is identical to a previously associated spanning tree, if the previously associated spanning tree is associated with one of the other assigned VLANs which is identical to the test VLAN.

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4. The method of claim 2, wherein the new spanning tree is unique if all of the other assigned VLANs are completely distinct.

10 5. The method of claim 2, wherein the new spanning tree is identical to a previously associated spanning tree associated with one of the other VLANs that is completely distinct, if the one of the other VLANs has an identifier that is identical to an identifier for the test VLAN.

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6. The method of claim 1, wherein the test VLAN is accepted if the test VLAN intersects entirely with one of the other VLANs.

20 7. The method of claim 6, further comprising running a first spanning tree on the test VLAN, wherein the first spanning tree is the same spanning tree run on the VLAN that entirely intersects with the test VLAN.

8. The method of claim 1, wherein the test VLAN is accepted if the test VLAN is distinct from all other VLANs.

9. The method of claim 8, further comprising running an identical spanning tree on the test VLAN if the test VLAN has an identifier that is identical to an identifier for one of the completely distinct VLANs.

10. The method of claim 8, further comprising running a new spanning tree on the test VLAN.

11. The method of claim 1, wherein the test VLAN is rejected if the test VLAN is not distinct from all other VLANs and does not intersect entirely with one of the other VLANs.

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12. The method of claim 11, further comprising transmitting the rejection to a user.

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13. The method of claim 1, wherein the method is performed at a network element.

14. A method for preventing a topology with partially intersecting VLANs by restricting the assignment of VLANs associated with a network element, the method comprising:

25 defining a new network circuit for the network element;

assigning a test VLAN to the new network circuit;

determining assignments of VLANs to other defined network circuits associated with the network element; and

associating a spanning tree to the test VLAN if the test

5 VLAN intersects entirely with one of the other VLANs, wherein the assigned spanning tree will be identical to a spanning tree associated with the one of the other assigned VLANs.

15. The method of claim 14, further comprising running a

10 unique spanning tree for each unique VLAN assigned to the network element.

16. A method for preventing a topology with partially intersecting VLANs by restricting the assignment of VLANs

15 associated with a network element, the method comprising:

defining a new network circuit for the network element;

assigning a test VLAN to the new network circuit;

determining assignments of VLANs to other network circuits

associated with the network element; and

20 associating a new spanning tree to the test VLAN if the test VLAN is completely distinct from all of the other VLAN assignments.

17. The method of claim 16, wherein the new spanning tree

25 is completely unique from all other associated spanning trees.

18. The method of claim 16, wherein the new spanning tree  
is identical to a spanning tree associated with one of the other  
VLAN assignments if the one of the other VLAN assignments has an  
5 identifier that is identical to an identifier associated with the  
test VLAN.

19. A computer program embodied on a computer readable  
medium for preventing a topology with partially intersecting  
10 VLANs, the computer program comprising:

a code segment for receiving information regarding creation  
of a network circuit;

a code segment for receiving information regarding  
assignment of a test VLAN to the created network circuit;

15 a code segment for retrieving provisioning data including  
VLAN assignments for other network circuits;

a code segment for determining if the test VLAN intersects  
entirely with one of the other VLANs;

20 a code segment for determining if the test VLAN is distinct  
from all other VLANs; and

a code segment for determining if the test VLAN is  
acceptable based on output of said code segment for determining  
if the test VLAN intersects entirely and said code segment for  
determining if the test VLAN is distinct.

20. The computer program of claim 19, wherein said code segment for determining if the test VLAN is acceptable accepts the test VLAN if the test VLAN is distinct from all other VLANs or intersects entirely with one of the other VLANs.

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21. The computer program of claim 20, further comprising a code segment for running an appropriate spanning tree on the test VLAN.

10        22. A computer program embodied on a computer readable medium for preventing a topology with partially intersecting VLANs by restricting the assignment of VLANs associated with a network element, the computer program comprising:

15        a code segment for defining a new network circuit for the network element;

      a code segment for assigning a test VLAN to the new network circuit;

      a code segment for determining assignments of VLANs to other defined network circuits associated with the network element; and

20        a code segment for associating a spanning tree to the test VLAN if the test VLAN intersects entirely with one of the other VLANs, wherein the assigned spanning tree will be identical to a spanning tree associated with the one of the other assigned VLANs.

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23. A computer program embodied on a computer readable medium for preventing a topology with partially intersecting VLANs by restricting the assignment of VLANs associated with a network element, the computer program comprising:

5       a code segment for defining a new network circuit for the network element;

          a code segment for assigning a test VLAN to the new network circuit;

10      a code segment for determining assignments of VLANs to other network circuits associated with the network element; and  
          a code segment for associating a new spanning tree to the test VLAN if the test VLAN is completely distinct from all of the other VLAN assignments.

15       24. An apparatus for preventing a topology with partially intersecting VLANs, the apparatus comprising:

          means for receiving information regarding creation of a network circuit and assignment of a test VLAN to the created network circuit;

20       means for retrieving provisioning data including VLAN assignments for the other network circuits;

          means for determining if the test VLAN intersects entirely with one of the other VLANs;

          means for determining if the test VLAN is distinct from all other VLANs; and

means, responsive to said means for determining if the test VLAN intersects entirely and said means for determining if the test VLAN is distinct, for determining if the test VLAN is acceptable.

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25. The apparatus of claim 24, wherein said means for determining if the test VLAN is acceptable accepts the test VLAN if

10 said means for determining if the test VLAN intersects entirely determines that the test VLAN intersects entirely with one of the other VLANs, or

said means for determining if the test VLAN is distinct determines the test VLAN is distinct from all other VLANs.

15 26. The apparatus of claim 25, further comprising means for running an appropriate spanning tree on the test VLAN.

27. A network device for preventing a network from having a topology with partially intersecting VLANs, the network device  
20 comprising:

memory;

one or more network interfaces; and

a processor configured to perform the steps of

defining a new network circuit for the network device;

25 assigning a test VLAN to the new network circuit;

determining assignments of VLANs to other network circuits associated with the network device; and  
determining if the test VLAN is acceptable.

5        28. The network device of claim 27, wherein said determining if test VLAN is acceptable performed by said processor includes

          determining if the test VLAN is completely distinct from all of the other VLAN assignments; and

10      accepting the test VLAN in response to a determination that the test VLAN is completely distinct from all of the other VLAN assignments.

15      29. The network device of claim 27, wherein said determining if test VLAN is acceptable performed by said processor includes

          determining if the test VLAN intersects entirely with one of the other VLANs; and

20      accepting the test VLAN in response to a determination that the test VLAN intersects entirely with one of the other VLANs.

30. The network device of claim 27, wherein said determining if test VLAN is acceptable performed by said processor includes

determining if the test VLAN intersects entirely with one of the other VLANs;

determining if the test VLAN is completely distinct from all of the other VLAN assignments; and

- 5       rejecting the test VLAN in response to a determination that the test VLAN does not intersect entirely with one of the other VLANs and a determination that the test VLAN is not completely distinct from all of the other VLAN assignments.

10       31. The network device of claim 27, wherein said processor is configured to perform the additional step of associating a new spanning tree to the test VLAN, responsive to a determination that the test VLAN is acceptable.